



IFW

Docket No.: 0283-0220PUS1  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Shigeyoshi NISHINO et al.

Application No.: 10/564,709

Confirmation No.: N/A

Filed: January 13, 2006

Art Unit: N/A

For: PROCESS FOR PREPARING 4-  
AMINOTETRAHYDROPYRAN COMPOUND  
AND AN ACID SALT THEREOF,  
SYNTHETIC INTERMEDIATE THEREOF  
AND PROCESS FOR PREPARING THE SAME

Examiner: Not Yet Assigned

**LETTER**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Subsequent to the filing of the above-identified application on January 13, 2006, attached hereto is an English translation of the Written Opinion of the International Searching Authority (Form PCT/ISA/237), the International Preliminary Report on Patentability (Form PCT/IB/373, and Notification of Transmittal of Copies of the Translation of the International Preliminary Report on Patentability (Form PCT/IB/338) that should be made of record in the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any

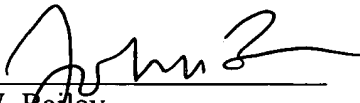
Application No.: 10/564,709

Docket No.: 0283-0220PUS1

additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Dated: August 18, 2006

Respectfully submitted,

By   
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Attachment(s)

# PATENT COOPERATION TREATY

TRANSLATION

From the  
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing  
(day/month/year)

Applicant's or agent's file reference

**FP2689PCT**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

**PCT/JP2004/010010**

International filing date (day/month/year)

**14.07.2004**

Priority date (day/month/year)

**14.07.2003**

International Patent Classification (IPC) or both national classification and IPC

Applicant

**UBE INDUSTRIES, LTD.**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/010010

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/010010

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has:
- ☒ paid additional fees
  - ☐ paid additional fees under protest
  - ☐ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:

The "special technical features" of claims 1-13 relate to the 2-substitution-4-hydrazinotetrahydropirane compound represented by the general formula (2) and the "special technical features" of claims 14-16 relate to a 2-substitution tetrahydropirane-4-sulfonate represented by the general formula (4). The item common to both of these is the chemical structure of the 4-substitution-tetrahydropirane; however, this chemical structure does not appear to possess novelty. Accordingly, these inventions do not have technical relations which comprise one or two or more or the same corresponding special technical features so that they are not so linked as to form a single general inventive concept.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

- ☒ all parts
- ☐ the parts relating to claims Nos. \_\_\_\_\_

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/010010

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

|                               |        |             |     |
|-------------------------------|--------|-------------|-----|
| Novelty (N)                   | Claims | 1-12, 14-16 | YES |
|                               | Claim  | 13          | NO  |
| Inventive step (IS)           | Claims | 1-12, 14-16 | YES |
|                               | Claim  | 13          | NO  |
| Industrial applicability (IA) | Claims | 1-16        | YES |
|                               | Claims |             | NO  |

2. Citations and explanations:

Document 1: JP 10-7658 A  
 Document 2: JP 2001-508078 A  
 Document 3: JP 63-48548 A  
 Document 4: JP 63-48550 A  
 Document 5: WO 01/42232 A1  
 Document 6: JP 10-279578 A  
 Document 7: M. ALLEGRETTI, et al., One-pot, new stereoselective synthesis of endo-tropanamine, Tetrahedron Letters, 2001, Vol. 42, No. 25, pp. 4257-4259

Claim 13 does not appear to possess novelty or to involve an inventive step since it is described in documents 1-4 cited in the ISR. In particular, document 1, example 55, document 2, page 72, document 3, page 5, document 4, page 14 disclose the 4-hydrozinotetrahydropyran compound.

None of the documents cited in the ISR disclose or suggest claims 1-12 and 14-16 so that the subject matter appears to possess novelty and to involve an inventive step. In particular, the method which involves a decomposition reaction of the 2-substitution-4-hydrazinotetrahydropyran compound or a salt thereof and production of a 4-aminotetrahydropyran compound or a salt thereof and the 2-substitution-tetrahydropyran-4-sulfonate with a hydrocarbon group in 2 position are neither described nor suggested.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/010010

Box No. VI Certain documents cited

1. Certain published documents (Rule 43bis.1 and 70.10)

| Application No.<br>Patent No. | Publication date<br>(day/month/year) | Filing date<br>(day/month/year) | Priority date (valid claim)<br>(day/month/year) |
|-------------------------------|--------------------------------------|---------------------------------|---|
| JP 2004-250340 A              | 09.09.2004                           | 18.02.2003                      |   |
| [E, X]                        |                                      |                                 |   |

2. Non-written disclosures (Rule 43bis.1 and 70.9)

| Kind of non-written disclosure | Date of non-written disclosure<br>(day/month/year) | Date of written disclosure<br>referring to non-written disclosure<br>(day/month/year) |
|--------------------------------|--|---|
|--------------------------------|--|---|

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

|  |  |  |
|--|--|--|
| Applicant's or agent's file reference<br>FP2689PCT   | <b>FOR FURTHER ACTION</b>  | See item 4 below   |
| International application No.<br>PCT/JP2004/010010   | International filing date ( <i>day/month/year</i> )<br>14 July 2004 (14.07.2004) | Priority date ( <i>day/month/year</i> )<br>14 July 2003 (14.07.2003) |
| International Patent Classification (8th edition unless older edition indicated)<br>See relevant information in Form PCT/ISA/237 |  |  |
| Applicant<br>UBE INDUSTRIES, LTD.  |  |  |

|                                     |  |   |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
|-------------------------------------|--|---|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|-------------------------------------|------------|----------------------------|-------------------------------------|-----------|---|-------------------------------------|------------|-------------------------|--------------------------|-------------|--|--------------------------|--------------|---|
| 1.                                  | This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).  |   |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| 2.                                  | This REPORT consists of a total of 6 sheets, including this cover sheet.<br><br>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.  |   |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| 3.                                  | <p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 80%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | <input checked="" type="checkbox"/>   | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input checked="" type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input checked="" type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I  | Basis of the report   |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. II   | Priority  |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| <input checked="" type="checkbox"/> | Box No. IV   | Lack of unity of invention  |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| <input checked="" type="checkbox"/> | Box No. V  | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| <input checked="" type="checkbox"/> | Box No. VI   | Certain documents cited   |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. VIII   | Certain observations on the international application   |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |
| 4.                                  | The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).   |   |           |                     |                          |            |          |                          |             |  |                                     |            |                            |                                     |           |   |                                     |            |                         |                          |             |  |                          |              |   |

|   |   |
|---|---|
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland | Date of issuance of this report<br>15 May 2006 (15.05.2006)   |
| Facsimile No. +41 22 740 14 35  | Authorized officer<br><div style="text-align: center; font-weight: bold; margin-top: 10px;">Yoshiko Kuwahara</div> Telephone No. +41 22 338 90 90 |



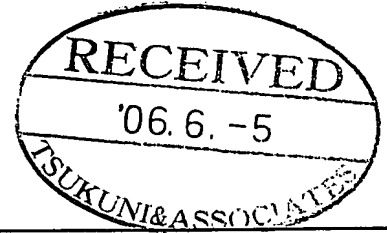
From the INTERNATIONAL BUREAU

**PCT**

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

To:

TSUKUNI, Hajime  
SAVX TS Bldg., 22-12,  
Toranomom 1-chome,  
Minato-ku, Tokyo  
1050001  
JAPON



|  |   |  |
|--|---|--|
| Date of mailing (day/month/year)<br>26 May 2006 (26.05.2006) |   |  |
| Applicant's or agent's file reference<br>FP2689PCT           | IMPORTANT NOTIFICATION  |  |
| International application No.<br>PCT/JP2004/010010           | International filing date (day/month/year)<br>14 July 2004 (14.07.2004) |  |
| Applicant<br>UBE INDUSTRIES, LTD. et al                      |   |  |

## 1. Transmittal of the translation to the applicant.



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

## 2. Transmittal of the copy of the translation to the designated or elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

## 3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

|   |  |
|---|--|
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland | Authorized officer<br><br>Yoshiko Kuwahara |
| Facsimile No.+41 22 740 14 35   | Facsimile No.+41 22 338 90 90              |